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II. Remarks/Arguments

A. Discussion of the Amendment

Claims 1 to 8 remain in this application. Claims 9 to 17 were cancelled in a previous amendment. Claims have been amended by this Amendment by adding new claims 18 and 19, which are, respectively, original dependent claims 5 and 7 in independent format. Consequently, original claims 5 and 7 have been cancelled.

There is clear antecedent basis for this Amendment in the originally filed application. See for example original claims 5 and 7. This Amendment does not introduce new matter or raise new issues. In fact, this Amendment reduces issues for appeal of the Final Rejection. This Amendment should be entered accordingly.

B. Discussion of the Final Rejection

1. The Objection to Claims 5 and 7

Original claims 5 and 7 were objected to as being dependent upon a rejected base claim. Examiner indicated that these claims would be allowable if re-written independent from including all of the limitations of the base claim and my intervening claims. New claims 18 and 19 meet this requirement and should be allowed.

2. The Rejection of Claims Under 35USC§103 (a) as Being Unpatentable Over USP 5,470,434 ("Terasawa, et. al")

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Claims 1, 3 and 4 are rejected under 35USC§103 (a) as being unpatentable over Terasawa, et. al." This rejection is respectfully traversed.

For an invention to be prima facie obvious, the court has indicated that the prior art must provide sufficient motivation for one of ordinary skill in the art to modify the prior art structure with a reasonable expectation that the invention as claimed would result. (See In re Lintner, 173 USPQ 560, In re Stenmiski, 444 F.2d 581, 170 USPQ 343 and In re Lee, 277 F.3d 1338, 61 USPQ 2d 1430.) The linch pin of the analysis is motivation with a reasonable expectation of success. There is no prima facie obviousness where the prior art itself provides no apparent basis for concluding that a person of ordinary skill in the art would be motivated to modify the prior art structure so as to arrive at the claimed structure with a reasonable expectation of success in achieving the advantages of the claimed apparatus. The requisite motivation is clearly not present in this case.

The present invention is directed to a crack-resistant paper or board comprising a cellulose fiber network web impregnated with a polymer. The polymer is impregnated into the web in geometrical formations as for example thin rectangular striper, equi-distant circles or diamond-shape formations. (See claims 1 and 3). Examiner's attention is directed to the examples at pages 5 and 6 of the application. As stated on the application, a web impregnated with a polymer in a circular geometrical patterns provided appreciably higher fracture toughness in both the MD and CD direction and a web impregnated with polymer in a rectangular geometrical pattern provided a paper or paper board having superior durability in the MD direction and improved fracture toughness in the CD direction as compared for the control. This invention and the advantages attendant there to are not taught or suggested by the cited references.

Terasawa, et. al discloses a decay resistant paper partly containing decayable portions. The paper is made by treating the paper with an N-substituted derivative of urea over the entire surface of the paper. The derivative

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is known to react with hydroxyl groups in cellulose by heating in the presence of a catalyst to form cross-links between the hydroxyl groups or methylol groups. This cross-linking hinders the groups and removes their hydrophilic character which renders the cross-linked areas resistant to action of soil microorganism (decay resistance) (See Col 3, lines 4 to 13 of Terasawa et. al.) By heating the treated paper in certain areas at a temperature sufficiently high to initiate cross-linking and in other areas at a temperature below the cross-linking initiation temperature, a paper is produced having decay resistant areas and decayable areas.

There are several basic differences between the claimed invention and the teachings of Terasawa, et. al. The primary difference is that this reference contains absolutely no teaching or suggestion of a paper or board formed from a cellulose fiber network web impregnated with a polymer material in geometrical patterns. In the absence of such a teaching or suggestion there is absolutely no motivation for one of ordinary skill in the art to make the claimed material.

In support of the rejection Examiner states:

"Terasawa disclosed decay-resistant impregnated paper cellulose made of fiber (abstract and column 2, lines 15-25) having discontinuous circular geometrical formations displayed in Figures 1 and 4 and column 12, lines 51-67, where the paper is impregnated with an antic decaying agent consisting of polymeric fiber (column 6, line 44 through column 7, line 30). Terasawa discloses 5% weight of the polymer fiber (column 9, lines 21-25). Terasawa does not disclose the polymer is thin. Thinness is an optimizable feature, which directly affects the integrity of the paper. It would have been obvious to one of ordinary skill in the art to optimize the polymer because discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 205 USPQ 215 and see in re Allen, 15 USPQ 233."

Examiner misconstrues the teaching at Column 6, line 44 and Column 7, line 30 of Terasawa. In the preceding portion at Column 6, line 15 to Column 6 line 41, Terasawa et. al. clearly teaches that the "polymer fiber" is a part of the paper. For example, at Column 6, line 15 to Column 6, line 17, Terasawa, et. al. states:

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"In addition, a paper made from a fiber blend composed of a natural fiber and a synthetic fiber can also be made decay resistant by the process of their invention", (emphasis added)

It is also significant to note that the synthetic polymer fiber component of the paper exist as a blend with the natural fiber. In the American Heritage Dictionary, 3rd edition, at page 148, a blend is defined as "To combine or mix so that the consistent parts are indistinguishable from one another...to form a uniform mixture" (emphasis added). This clearly differs from the present invention in which the polymer is impregnated in geometrical patterns. In fact, it appears to be exactly the opposite.

This rejection is clearly predicated on an obvious-to-try and hindsight reliance of teaching of applicants' application. It is well settled law that hindsight and obvious-to-try are not the standards of review. The courts have clearly held that the appropriate standard is obvious to do based on reasonable motivation from the references with a reasonable expectation that the invention, as a whole, will result. Employing this standard, it is clear that the rejection under 35USC§103 is inappropriate. (See In re Antonie, 559 F2d 618, 195 USPQ 6 and In re Tomlinson et.al., 363 F2d 928, 150 USPQ 623.)

3. The Rejection Of Claims Under 35USC§103 (A) As Being Unpatentable Over Terasawa, Et. Al In View Of USP 4,596.635 ("Warszawski")

Claims 2, 6 and 8 are rejected under 35USC§103 (a) as being unpatentable over Terasawa, et. al in view of USP 4,596.635 ("Warszawski"). This rejection is respectfully traversed.

The deficiencies of Terasawa, et. al are noted above. These deficiencies are not obviated by Warszawski, the secondary reference. It is well settled law that references can be combined to frame a Section 103 rejection, but they

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cannot be combined indiscriminately. In re Mercier, 515 F2d 1161, 184 USPQ (C.C.P.A. 1982). As the Court stated in re Sterniski, 444 F2d 581, 170 USPQ 343 (C.C.P.A. 1971):

"there must be some logical reason apparent from positive, concrete evidence of record which justifies a combination of primary and secondary references and subsequent conclusion of obviousness."

No such "logical reason" has been presented by Examiner nor is any set forth in the references themselves. There is no teaching or suggestion in any cited reference, which would motivate one of ordinary skill in the art to pick and choose bits and pieces from Terasawa, et. al. and combine them with bits and pieces from Warszawski to hypothetically create the claimed invention.

Even if there was motivation to combine these references, the resulting combination does form the claimed invention on that there is no teaching or suggestion on either reference of a geometric pattern. As discussed above, Terasawa, et. al. clearly does not provide such a teaching. Warszawski also does not provide such a teaching or suggestion and is not relied by Examiner as doing so.

Lastly, Warszawski is clearly related to non-analogous art. The two criteria for determining whether prior art is analogous are: (1) whether the reference is from the same field of endeavor regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference is still reasonably pertinent to the particular problem which the inventor is involved. In Clay, 966 F2d 656, 23 USPQ 2d 1058 (Fed. Cir. 1992). Warszawski clearly does not relate the same field as that of the present invention or for that matter, the field of Terasawa et. al. Note that Warszawski relates to the field of electro sensitive media and recording processes, while the present invention relates to the field of engineered crack resistant paper and board. These fields of endeavor are clearly different. Nor is Warszawski reasonably

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pertinent to the problem solved by the present invention, i.e. crack resistant paper and board.

This rejection is clearly predicated on an obvious-to-try and hindsight reliance of teaching of applicants' application. Hindsight and obvious-to-try are not the standard of review. The courts have clearly held that the appropriate standard is obvious to do based on reasonable motivation from the references and not obvious to try. In re Antonie, 559 F2d 618, 195 USPQ 6 (C.C.P.A. 1977) and In re Tomlinson et. al., 363 F2d 928, 150 USPQ 623 (C.C.P.A. 1966).

In view of the foregoing, applicants respectfully request that Examiner reconsider the rejections and allow all pending claims.

Respectfully Submitted,
WADOOD HAMAD, ET. AL.

Date: 3-8-04

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